

CLAIMS

1.

A method for modifying a plant to produce an antibody or an active fragment or derivative thereof, or a protein functionally equivalent thereto, in a desired cellular compartment comprising introducing into a plant a DNA sequence encoding a heavy chain immunoglobulin or an active fragment or derivative thereof, or a sequence encoding a protein functionally equivalent thereto, said DNA sequence being operably linked to one or more promoters and provided, as appropriate, with an additional sequence encoding a peptide sequence capable of targeting said antibody or fragment or derivative thereof to said desired cellular compartment.

2.

A method according to claim 1 wherein the DNA sequence encoding the heavy chain immunoglobulin or fragment or derivative thereof is obtainable from camelids.

3.

A method according to claim 1 or claim 2 wherein the plant is selected from tobacco, pea, potato, spinach, tomato or tea.

4.

A method according to claim 1 wherein the heavy chain immunoglobulin or active fragment or derivative thereof binds to a protein present in the plant.

5.

A method according to claim 1 wherein the heavy chain immunoglobulin or active fragment or derivative thereof binds to a plant or animal pathogen.

5

10

15

20

25

30

09737476-131800

Subal

6. A method according to claim 1 wherein the heavy chain immunoglobulin or active fragment or derivative thereof binds to a plant hormone or metabolite.

5 7. A plant prepared according to the method of claim 1.

10 8. A modified plant having, in a desired cellular compartment, enhanced levels of heavy chain immunoglobulins or active fragments or derivatives thereof or proteins functionally equivalent thereto compared to equivalent but unmodified plants.

15 9. Seeds, fruits, progeny and hybrids of a plant according to claim 7 or 8.

20 10. A food product comprising a plant according to claim 7 or 8.

25 11. A method for increasing pathogen resistance in a plant comprising introducing into said plant a DNA sequence encoding a heavy chain immunoglobulin which binds to a plant or animal pathogen, or an active fragment or derivative thereof or one or more sequences encoding a protein functionally equivalent thereto, according to the method of claim 1.

30 12. A method for modulating plant metabolism comprising introducing into said plant a DNA sequence encoding a heavy chain immunoglobulin which binds to a protein present in said plant or an active fragment or derivative thereof or one or more sequences encoding a protein functionally equivalent thereto according to the method of claim 1.

13. A method for preparing a heavy chain immunoglobulin or an active fragment or derivative thereof comprising the steps of:

- 5 (i) modifying a plant according to the method of claim 1, and
- (ii) extracting from said modified plant the heavy chain immunoglobulin or active fragment or derivative thereof produced therein.

003737 9242660

add
a3